

RAW SEQUENCE LISTING

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Application Serial Number: 08/434,105
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IFW16

RAW SEQUENCE LISTING
PATENT APPLICATION: US/08/434,105

DATE: 10/27/2006
TIME: 10:10:14

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Output Set: N:\CRF4\10272006\H434105.raw

3 <110> APPLICANT: Fischhoff, et al.
 5 <120> TITLE OF INVENTION: SYNTHETIC PLANT GENES AND METHOD FOR PREPARATION
 7 <130> FILE REFERENCE: 28079/41785
 9 <140> CURRENT APPLICATION NUMBER: US 08/434,105
 10 <141> CURRENT FILING DATE: 1995-05-03
 12 <150> PRIOR APPLICATION NUMBER: US 07/959,506
 13 <151> PRIOR FILING DATE: 1992-10-09
 15 <150> PRIOR APPLICATION NUMBER: US 07/476,661
 16 <151> PRIOR FILING DATE: 1990-02-12
 18 <150> PRIOR APPLICATION NUMBER: US 07/315,355
 19 <151> PRIOR FILING DATE: 1989-02-24
 21 <160> NUMBER OF SEQ ID NOS: 40
 23 <170> SOFTWARE: PatentIn version 3.3
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 1743
 27 <212> TYPE: DNA
 28 <213> ORGANISM: Artificial sequence
 30 <220> FEATURE:
 31 <223> OTHER INFORMATION: Synthetic nucleotide sequence encoding Btk HD-1 insecticidal protein
 32 (cry1Ab), described in Example 1, and set forth in the lower line of
 33 Figure 2
 35 <400> SEQUENCE: 1
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 38 ttgagtgaat ttgttcccg tgctggatt gtgttaggac tagttgat tatctggga 120
 40 attttggtc cctctcaatg ggacgcattt ctgtacaaa ttgaacagct catcaaccag 180
 42 agaatcgaag agttcgctag gaatcaagcc atttcttagat tagaaggact aagcaatctt 240
 44 tataaaattt acgcagaatc ttttagagag tgggaagcag atcctactaa tccagcatta 300
 46 agagaagaga tgcgtattca attcaatgac atgaacagtg cccttacaac cgctattcct 360
 48 cttttgcag ttcaaaaattt tcaagttcct ctcctctccg tgtacgttca agctgccaac 420
 50 ctccacctct cagtttgag agatgttca gtgttggac aaaggtgggg atttgatgcc 480
 52 gcgactatca atagtcgtta taatgattt actaggttta ttggcaacta tacagatcat 540
 54 gctgtacgct ggtacaatac gggatttagag cgtgtatggg gaccggattc tagagattgg 600
 56 atcaggtaca accagttcag aagagagctt acactaactg tattagatat cgtttctcta 660
 58 tttccgaact atgatagtag aacgtatcca attcgaacag tttcccaatt aacaagagaa 720
 60 atttatacaa acccagtatt agaaaatttt gatggtagtt ttgcaggctc ggctcaggc 780
 62 atagaaggaa gtattaggag tccacatttt atggatatac ttaatagtat aaccatctat 840
 64 acgatgctc atagaggaga atactactgg tccggtcacc agatcatggc ttctcctgtat 900
 66 gggtttcgg ggccagaatt cactttccg ctatatggaa ctatggaaa tgcaagctcca 960
 68 caacaacgtt ttgttgcata actaggtcag ggcgtgtata gaacattatc gtccacctta 1020
 70 tatagaagac ctttaacat cggatcaac aaccaacaac tatctgttct tgacgggaca 1080
 72 gaatttgctt atggaacctc ctcaaatttg ccatccgctg tatacagaaa aagcggAACG 1140
 74 gtagattcgc tggatgaaat accgccacag aataacaac tgccacctag gcaaggattt 1200
 76 agtcatcgat taagccatgt ttcaatgttt cgttcaggct ttagtaatag tagtgtaaat 1260

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78 ataataagag ctcctatgtt ctcttgata catcgtagtg ctgagttcaa caacatcatc 1320
 80 ccttcatcac aaatcccca aatcccactc accaagtcta ctaatcttgg ctctggaact 1380
 82 tctgtcggtt aaggaccagg atttacagga ggagatattc ttgcagaagac ttccacctggc 1440
 84 cagatttcaa ccttaagagt aaatattact gcaccattat cacaagata tcgggtaaga 1500
 86 attcgctacg cttctaccac aaaccttcag ttccacacat caattgacgg aagacctatt 1560
 88 aatcagggga attttcagc aactatgagt agtgggagta atttacagtc cggaagcttt 1620
 90 aggactgttag gttttactac tcgcgttaac tttcaaatg gatcaagtgt atttacgtt 1680
 92 agtgctcatg tcttcaattc aggcaatgaa gtttatata tag atcgaattga atttgttccg 1740
 94 gca 1743
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 98 <211> LENGTH: 1743
 99 <212> TYPE: DNA
 100 <213> ORGANISM: Artificial sequence
 102 <220> FEATURE:
 103 <223> OTHER INFORMATION: Native Blk HD-1 nucleotide sequence encoding Btk HD-1 toxin
 104 protein (Cry1Ab) from amino acid 29-607 as described in Example 1
 105 & set forth in the upper line of Figure 2, & includes synthetic
 106 sequence encoding N-terminal Met-Ala
 108 <400> SEQUENCE: 2
 109 atggctataag aaactgggtt caccccaatc gatatttcct tgtcgctaac gcaatttctt 60
 111 ttgagtgaat ttgttccgg tgctggatt gtgttaggac tagttgat aatatgggaa 120
 113 attttggtc cctctcaatg ggacgcattt cttgtacaaa ttgaacagtt aattaaccaa 180
 115 agaatagaag aattcgctag gaaccaagcc atttcttagat tagaaggact aagcaatctt 240
 117 tatcaaattt acgcagaatc ttttagagag tggaaagcag atcctactaa tccagcattt 300
 119 agagaagaga tgcgtattca attcaatgac atgaacagtg cccttacaac cgcttattcct 360
 121 cttttgcag ttcaaaattt tcaagttcct ctttattcag tatatgttca agctgcaaatt 420
 123 ttacatttat cagtttgag agatgttca gtgttggac aaaggtgggg attttagtgc 480
 125 gcgactatca atagtcgttta taatgattt actaggctt ttggcaacta tacagatcat 540
 127 gctgtacgct ggtacaatac gggatttagag cgtgtatggg gaccggattc tagagattgg 600
 129 ataagatata atcaattttag aagagaattt acactaactg tattagat cgtttctcta 660
 131 tttccgaact atgatagtag aacgtatcca attcgaacag tttcccaattt aacaagagaa 720
 133 atttatacaa acccagtattt agaaaattt gatggtagtt ttgcaggctc ggctcagggc 780
 135 atagaaggaa gtattaggag tccacattt atggatatac ttaatagttt aaccatctat 840
 137 acggatgctc atagaggaga atattattgg tcagggcatc aaataatggc ttctcctgtt 900
 139 gggtttcgg ggcagaattt cactttcgg ctatatggaa ctatggaaa tgcagctcca 960
 141 caacaacgtt ttgttgcctca actaggtcag ggcgtgtata gaacatttac gtccacctt 1020
 143 tatagaagac cttttaatat agggataaatt aatcaacaac tatctgttct tgacgggaca 1080
 145 gaatttgctt atggAACCTC ctcaaatttgc ccattccgtg tatacagaaaa aagcggaaacg 1140
 147 gtagattcgc tggatgaaat accgccacag aataacaacg tgccacctt gcaaggattt 1200
 149 agtcatcgat taagccatgt ttcaatgtt cgttcaggct ttagtaatag tagtgttaat 1260
 151 ataataagag ctcctatgtt ctcttgata catcgtagtg ctgattttaa taatataatt 1320
 153 ctttcatcac aaattacaca aatacccttta acaaaatcta ctaatcttgg ctctggaact 1380
 155 tctgtcggtt aaggaccagg atttacagga ggagatattc ttgcagaagac ttccacctggc 1440
 157 cagatttcaa ccttaagagt aaatattactt gcaccattat cacaagata tcgggtaaga 1500
 159 attcgctacg cttctaccac aaatttacaa ttccatacat caattgacgg aagacctatt 1560
 161 aatcagggga attttcagc aactatgagt agtgggagta atttacagtc cggaagcttt 1620
 163 agactgttag gttttactac tcgcgttaac tttcaaatg gatcaagtgt atttacgtt 1680
 165 agtgctcatg tcttcaattc aggcaatgaa gtttatata tag atcgaattga atttgttccg 1740
 167 gca 1743

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 172 <212> TYPE: DNA
 173 <213> ORGANISM: Artificial sequence
 175 <220> FEATURE:
 176 <223> OTHER INFORMATION: Synthetic sequence encoding Btk HD-1 insecticidal toxin protein
 177 (Cry1Ab), described in Example 2, and set forth in the lower line of
 178 Figure 3
 180 <400> SEQUENCE: 3
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 183 gttgaagtac ttgggtggaga acgcatttaca acccggttaca ctcccatcga catctccttg 120
 185 tccttgacac agtttctgtc cagcgagttc gtgccagggtg ctgggttcgt tctcgacta 180
 187 gttgacatca tctgggttat ctttggtcca tctcaatggg atgcatttctt ggtcaaatt 240
 189 gagcagttga tcaaccagag gatcgaagag ttcccaggaa accaggccat ctctaggtt 300
 191 gaaggattga gcaatctcta ccaaacttat gcagagagct tcagagagtg ggaagccgat 360
 193 cctactaacc cagctctccg cgaggaaatg cgtattcaat tcaacgacat gaacagcgcc 420
 195 ttgaccacag ctatcccatt gttcgagtc cagaactacc aagttccctt cttgtccgt 480
 197 tacgttcaag cagctaatct tcacccatcgt gtcgttgcgt acgttagtgcgt gtttggccaa 540
 199 aggtggggat tcgatgtgc aaccatcaat agccgttaca acgcaccttac taggtgtatt 600
 201 gaaaaactaca ccgaccacgc ttgtcggttgg tacaacactg gcttggagcg tgcttgggt 660
 203 cctgattcta gagatggat tagataacaac cagttcagga gagaatttgc cctcacagtt 720
 205 ttggacatttgc ttgtctctttt cccgaactat gactccaggaa cctaccctat ccgtacagt 780
 207 tcccaactta ccagagaaat ctatactaacc ccaggatcttgc agaacttgcg cggtagctt 840
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 211 aacagcataa ctatctacac cgatgtcac agaggagagt attactggtc tggacaccag 960
 213 atcatggcct ctcccaatcgttgg attcagcggg cccgagtttca ctttccctt ctatggact 1020
 215 atggaaacgc ccgctccaca acaacgttac gttgtcaac taggtcagggt tgcttacaga 1080
 217 accttgttctt ccacccatcgttca cagaagaccc ttcaatatcg gtatcaacaa ccagcaactt 1140
 219 tccgttcttgc acggaaacaga gttcgcttat ggaaccttca ctaacttgcg atccgtgtt 1200
 221 tacagaaaaga gcgaaaccgt tgattccctt gacgaaatcc caccacagaa caacaatgt 1260
 223 ccacccaggc aaggatttcc ccacagggttgc agccacgttgc ccatgttccg ttccggattc 1320
 225 agcaacagtt ccgtgagcat catcagagct cctatgttgc catggatca tcgttagtgc 1380
 227 gagttcaaca atatcattcc ttcctctcaa atcaccctaa tcccatggac caagtctact 1440
 229 aacccatggat ctggaaacttc tgctcgaaa ggaccaggct tcacaggagg tgatattctt 1500
 231 agaagaactt ctcctggcca gattagcacc ctcagagtttca acatcactgc accacttct 1560
 233 caaagatatac gtgtcaggat tcgttacgca tctaccacta acttgcatttcc 1620
 235 atcgacggaa ggcctatcaa tcagggttac ttctccgaa ccatgtcaag cggcagcaac 1680
 237 ttgcaatccg gcagcttcag aaccgtcggttgc ttcactactc cttcaactt ctctaaacgg 1740
 239 tcaagcgttt tcacccttgc cgctcatgttgc ttcaatttgc gcaatgaagt gtacatttgc 1800
 241 cgtatttgcgtt ttgtgccttgc cgaaggatc ttgcaggctg agtac 1845
 244 <210> SEQ ID NO: 4
 245 <211> LENGTH: 1845
 246 <212> TYPE: DNA
 247 <213> ORGANISM: Artificial sequence
 249 <220> FEATURE:
 250 <223> OTHER INFORMATION: Native Btk HD1 nucleotide sequence encoding Btk HD-1 insecticidal
 251 toxin protein (Cry1Ab), described in Example 2, and set forth in
 252 the upper line of Figure 3
 254 <400> SEQUENCE: 4

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TIME: 10:10:14

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257	gtagaagtat taggtggaga aagaatagaa actggttaca ccccaatcgat tatttccttg	120
259	tgcgtaacgc aattttttt gagtgaattt gttcccggtg ctggatttgc gttaggacta	180
261	gttgatataa tatgggaat ttttggtccc tctcaatggg acgcatttct tgtacaattt	240
263	gaacagttaa ttaaccaaag aatagaagaa ttgcgttagga accaagccat ttcttagatta	300
265	gaaggactaa gcaatctta tcaaatttac gcagaatctt ttagagagtggaaagcagat	360
267	cctactaattc caggatttaag agaagagatg cgtattcaat tcaatgcacat gaacagtgc	420
269	cttacaacccg ctattccctt ttttgcaggtaaaaatttac aagttccctt tttatcgat	480
271	tatgttcaag ctgcaaaattt acatttatca gtttgagag atgtttcagt gtttggacaa	540
273	agtgccccat ttgatgccgc gactatcaat agtcgttata atgatttaac taggcttatt	600
275	ggcaactata cagatcatgc tgcgtctgg tacaatacgg gattagagcg tgcgtatggga	660
277	ccggattcta gagatggat aagatataat caatttagaa gagaatttaac actaactgtat	720
279	ttagatatcg tttcttatttccgactat gatagtagaa cgtatccaat tcgaacagtt	780
281	tcccaattaa caagagaaat ttatcacaa ccagatttag aaaatttgc tggtatgttt	840
283	cgaggctcgg ctcaggccat agaaggaat attaggatc cacatttgc ggtatatactt	900
285	aatagtataa ccatctatac ggatgcgtat agaggagaat attattggtc agggcatcaa	960
287	ataatggctt ctccgttagg gtttccggg ccagaattca ctttccgc atatggact	1020
289	atggggaaatg cagctccaca acaacgtattt gttgtcaac taggtcaggcg tgcgtataga	1080
291	acattatcgcc caccattata tagaagacat ttaatatacg ggtatataaa tcaacaacta	1140
293	tctgttcttg acgggacaga atttgcattt ggaaccttctt caaatttgc atccgctgtat	1200
295	tacagaaaaaa gcggaacggt agattcgcgtg gatgaaatac cgccacagaa taacaacgtg	1260
297	ccaccttaggc aaggatttag tcacgtatc agccatgtt caatgttgc ttcaggctt	1320
299	agtaatagta gtgttaatgat aataagagct cctatgttctt cttggatatac tcgtatgtct	1380
301	gaattttata atataattcc ttcatcacaa attacacaaa tacctttaac aaaatctact	1440
303	aatcttggct ctggacttgc tgtcgttaaa ggaccaggat ttacaggagg agatattctt	1500
305	cgaagaactt cacctggcca gatttcaacc ttaagagtaa atattactgc accattatca	1560
307	caaagatattt gggtaagaat tcgctacgtt tctaccacaa atttacaatt ccatacatca	1620
309	attgacggaa gacattttaa tcagggaaat ttttcagcaat ctagtagtag tggagtagat	1680
311	ttacagtccg gaagctttag gactgttaggt ttactactc cgtttaactt ttcaaatggaa	1740
313	tcaagtgtat ttacgttaag tgctcatgtc ttcaatttcg gcaatgaatg ttatataat	1800
315	cgaattgaat ttgtccggc agaagtaacc tttgaggcag aatat	1845
318	<210> SEQ ID NO: 5	
319	<211> LENGTH: 1921	
320	<212> TYPE: DNA	
321	<213> ORGANISM: Artificial sequence	
323	<220> FEATURE:	
324	<223> OTHER INFORMATION: Synthetic hybrid of first 1360 bases synthetic HD-1 linked	

to

325	modified HD-73 sequence, described in paragraph bridging pages 53-	
326	54, and as set forth in the lower line of Figure 4	
328	<400> SEQUENCE: 5	
329	atggacaaca accaaacat caacgaatgc attccatatac actgcttgcgtaaaccggaa	60
331	gttgaagtac ttggggaga acgcatttgc accgttaca ctcctatcgat tatttccttg	120
333	tccttgacac agtttctgtt cagcgatgtt gtcgtatggcgatgttgcgtat	180
335	gttgacatca tctgggttat ctttggtcca tctcaatggg atgcatttctt ggtcaattt	240
337	gagcagttga tcaaccagag gatcgaagag ttgcgtatggc accaggccat ctctaggttgc	300
339	gaaggattga gcaatcttca ccaatctat gcaagatgtt tcagtaggtggaaagccat	360
341	cctactaacc cagctctccg cgaggaaatg cgtattcaat tcaacgcacat gaacagcgcc	420
343	ttgaccacaaat cttatccattt gttcgatgc cagaactacc aagttccctt cttgtccgtt	480
345	tacgttcaag cagctaatctt tcacctcagc gtgttgcaggcgtttagcgttggccaa	540

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349	ggaaactaca	ccgaccacgc	tgttcgttgg	tacaacactg	gcttggagcg	tgtctgggg	660
351	cctgattcta	gagattggat	tagataacaac	cagttcagga	gagaattgac	cctcacagtt	720
353	ttggacattt	tgtctcttt	cccgaactat	gactccagaa	cctaccctat	ccgtacagt	780
355	tcccaactta	ccagagaaat	ctatactaac	ccagttctt	agaacttcga	cggttagctc	840
357	cgtggttctg	cccaaggat	cgaaggctcc	atcaggagcc	cacacttgat	ggacatctt	900
359	aacagcataa	ctatctacac	cgatgctcac	agagggaggt	attactggtc	tggacaccag	960
361	atcatggcct	ctccagttgg	attcagcggg	cccgagttt	ccttcctct	ctatggact	1020
363	atggaaaacg	ccgctccaca	acaacgtatc	gttgcctaac	taggtcaggg	tgtctacaga	1080
365	accttgtctt	ccacccgtt	cagaagaccc	ttcaatatcg	gtatcaacaa	ccagcaactt	1140
367	tccgttctt	acggAACAGA	gttgccttat	ggaacctt	ctaacttgcc	atccgctt	1200
369	tacagaaaaga	gccccaccgt	tgattcctt	gacggaaatcc	caccacagaa	caacaatgt	1260
371	ccacccaggc	aaggattctc	ccacagggtt	agccacgtgt	ccatgttcc	ttccggattc	1320
373	agcaacagtt	ccgtgagcat	catcagagat	cctatgttct	cttggataca	ccgttagtgc	1380
375	gagttcaaca	acatcatcgc	atccgatagt	attactcaa	tccctgcagt	gaagggaaac	1440
377	tttctcttca	acggttctgt	catttcagga	ccaggattca	ctgggtggaga	cctcggtttaga	1500
379	ctcaacagca	gtggaaataa	cattcagaat	agagggtata	ttgaagtcc	aattcacttc	1560
381	ccatccacat	ctaccagata	tagagttcg	gtgaggtatg	cttctgtgac	ccctatttac	1620
383	ctcaacgtta	attgggttaa	ttcatccatc	ttctccaaata	cagttccagc	tacagctacc	1680
385	tccttggata	atctccaatc	cagcgattt	gtttaacttt	aaagtgc	tgctttaca	1740
387	tcttcactcg	gtaacatcg	gggtgttaga	aacttagt	ggactgcagg	agtgattatc	1800
389	gacagattcg	agttcattcc	agttactgca	acactcgagg	ctgaatataa	tctggaaaga	1860
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401	<220>	FEATURE:					
402	<223>	OTHER INFORMATION:	Native Bt nucleotide sequence encoding N-terminal 450 HD-1				
(Cry1Ab)							

403 amino acids and 451-615 of Bkt HD73 (Cry1Ac) described in Example 3
 404 and as set forth in the upper line of Figure 4

406 <400> SEQUENCE: 6

407	atggataaca	atccgaacat	caatgaatgc	attccattata	attgtttaag	taaccctgaa	60
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411	tcgctaacgc	aatttctttt	gagtgaattt	gttcccggt	ctggattttgt	gtttaggacta	180
413	gttgatataa	tatgggaat	tttggtccc	tctcaatggg	acgcatttct	tgtacaaatt	240
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417	gaaggactaa	gcaatcttta	tcaaatttac	gcagaatctt	ttagagagt	ggaagcagat	360
419	cctactaattc	cagcattaaag	agaagagatg	cgtattcaat	tcaatgcacat	gaacagtgc	420
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433	tcccaattaa	caagagaaat	ttatacaaaac	ccagatttag	aaaattttga	tggtagttt	840
435	cgaggctcg	ctcaggccat	agaaggaat	attaggagtc	cacatttgat	ggatataactt	900
437	aatagtataa	ccatctatac	ggatgctcat	agaggagaat	attattggtc	agggcatcaa	960

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